An Experience Management System for a Software Engineering Research Organization

Victor Basili, Patricia Costa, Mikael Lindvall, Manoel Mendonca, Carolyn Seaman, Roseanne Tesoriero, and Marvin Zelkowitz

Fraunhofer Center
for Experimental Software Engineering -
Maryland

Business Problems

- "Our knowledge has legs – it walks home everyday"
  - Leif Edvinsson, Brain of the year '98, director of intellectual capital, Skandia Insurance Co.
- "Not only do you have experience walking out the door, you have inexperience walking in the door"
  - Scott Eliot, Director Knowledge Management Product Groups, Lotus (KMWorld 2001)
- Particularly problematic for software organizations (human and knowledge intensive)
  - Loss of knowledge
    - When employees leave
  - Lack of knowledge
    - Novices lack knowledge
    - Experts lack time
    - Location of Knowledge is not known

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Knowledge Management

Addresses business problems by

- Capturing and Sharing Knowledge

The Experience Factory, an example of KM, recognizes that organizations need to learn from their past experiences

- deliver products faster,
- cheaper, and
- with higher quality than before

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Why don't all organizations do KM?

- It is hard! (Payoff takes time and it's a hard sell)

- To management: Invest now, harvest later (hard to show benefits)
  - Management issues: What is the return on the investment? What is the payoff time?

- To individual workers: You invest now, someone else might harvest later
  - Individual issues: What do I get out of changing my work processes and doing additional work?

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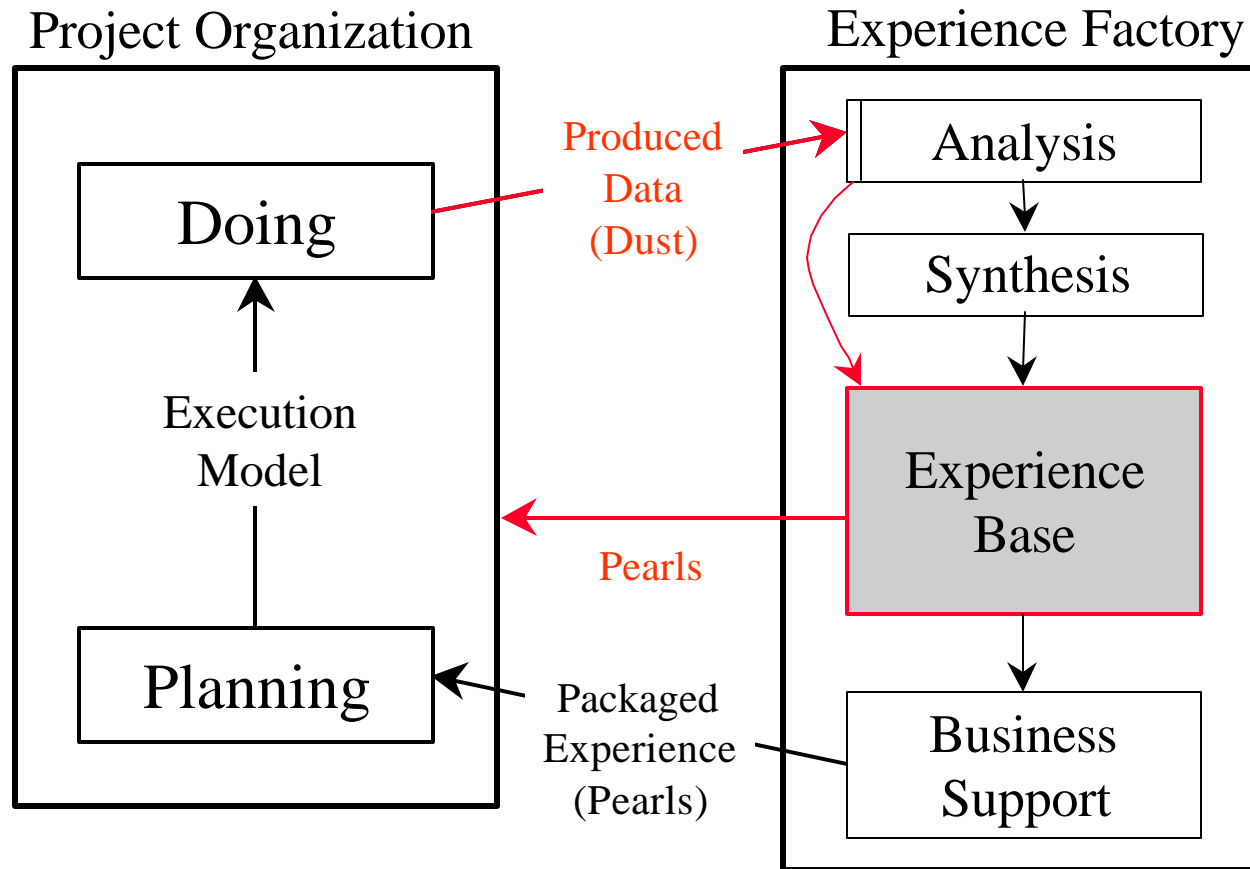Maryland

Objectives of new approach

- Is there a less risky approach that lets you
  - Invest less now, harvest some now,
  - evaluate,
  - invest more later, harvest more later?

- At the same time enabling individual workers to benefit themselves by contributing to the system?

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Knowledge Dust and Pearls Approach

- Our approach is based on
    - Dust: The AnswerGarden Approach (Short-term needs based, Ad Hoc!, organic growth, fine-granular items)
    - Pearls: The Experience Factory Approach (Long term needs, analysis&synthesis, feedback loops, separate group)

- Capture the knowledge dust that employees use and exchange on a daily basis and immediately (with minimal modifications) make it available throughout the organization.

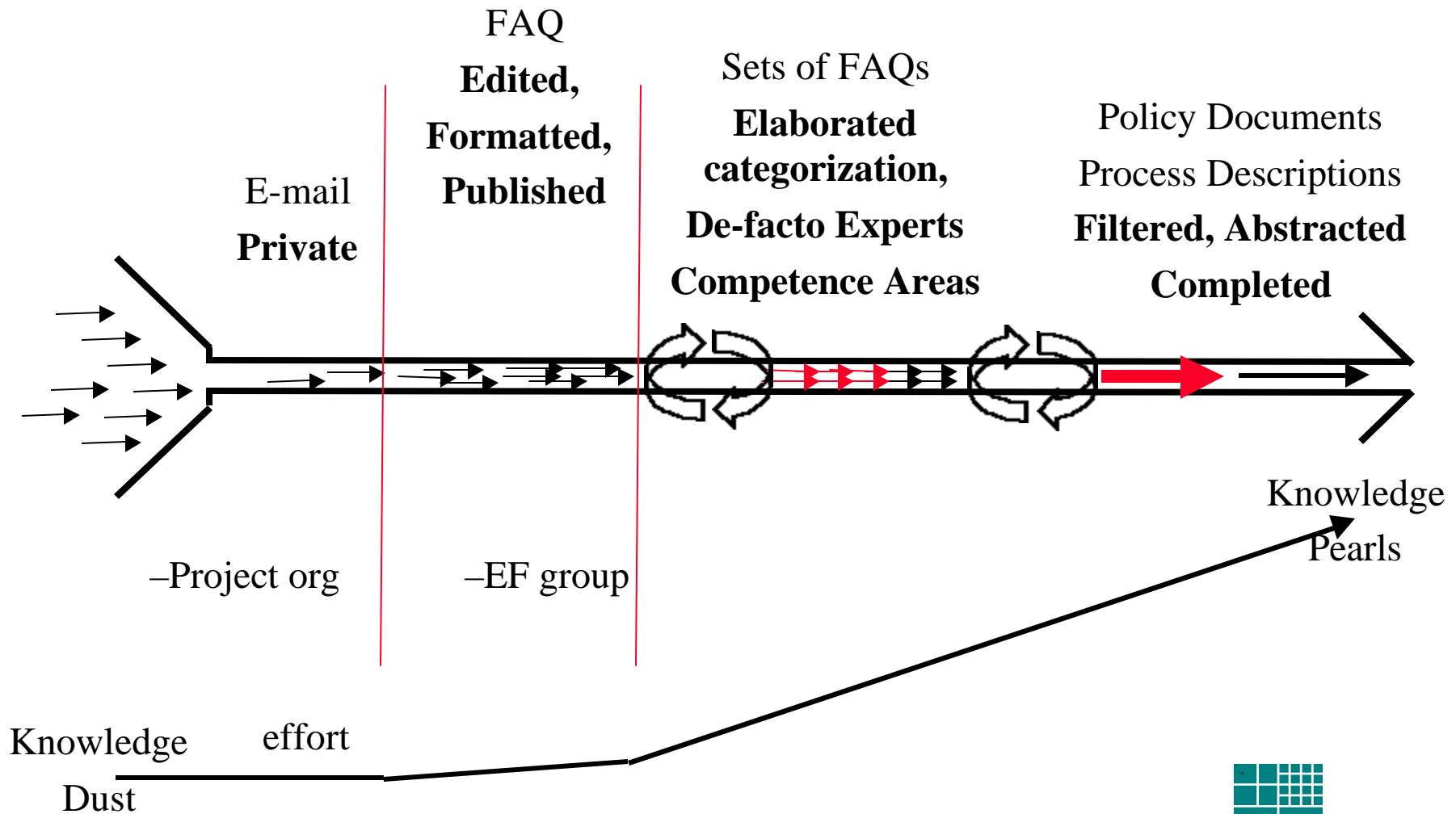- Analyze and synthesize the dust and turn it into knowledge pearls

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The Experience Factory Model

Project Organization

Experience Factory

Doing

Produced Data (Dust)

Analysis

Synthesis

Execution Model

Experience Base

Pearls

Planning

Packaged Experience (Pearls)

Business Support

"New" Shorter Feedback loop

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Culturing Dust into Pearls

FAQ
Edited,

Sets of FAQs

Formatted,

Elaborated

Policy Documents

E-mail

Published

categorization,

Process Descriptions

Private

De-facto Experts

Filtered, Abstracted

Competence Areas

Completed

Knowledge
Pearls

–Project org

–EF group

Knowledge

effort

Dust

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Knowledge Dust

- Produced by individuals during their core activities

- Knowledge Dust is a nice side-effect

- It doesn't mean that it takes no time or that it is worthless in another context
  - Ask for a little bit of more information (more info. on bugs)
  - Asking for a minor change in behavior (capture tacit knowledge)

- Knowledge Dust is small/fine-granular from a knowledge management perspective and might not convey a lot of information

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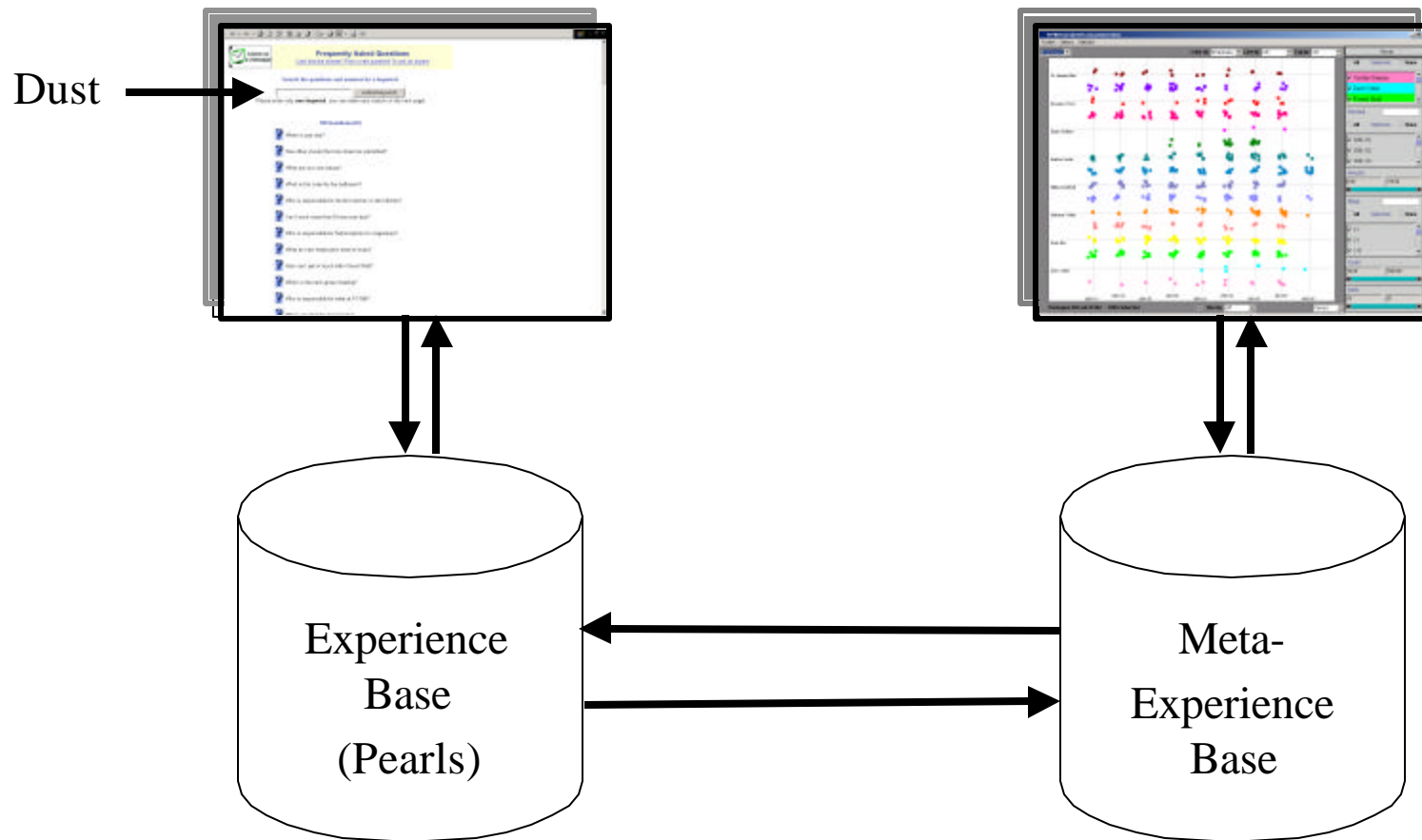November 28, 2001

Knowledge Pearls

- Dust grouped together and analyzed evolves into higher levels of knowledge (larger and larger pearls)

- It's a continuous improvement process

- Produced by the Experience Factory group

- Fed back into the experience base for future use and improvement

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FC-MD Examples

- At FC-MD we use the approach in several different ways:

- Question->Answer in E-mail->FAQ->set of FAQs->Process Description

- Incident-> Captured Lessons Learned->set of LLs ->Best Practices

- Defect->Bug Report->set of Bug Reports->Problem areas->
  Solutions->Design Rules->Development Practices

- eWorkshop Chat statements->Real time analysis->Summary->
  Best Practices, Lessons Learned

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Tool Support

Dust →

Experience Base (Pearls) ← Meta-Experience Base

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Conclusions

- We added features from the AnswerGarden approach to the the Experience Factory approach by creating a "new" shorter feedback loop that jumpstarts the creation and evolvement of experience bases.

- The resulting approach, Knowledge Dust and Knowledge Pearls, is a web-based, low-barrier, and less-risky approach that helps organizations
  - quickly capture, share and use daily knowledge, and
  - evolve it into more complex knowledge over time.

- The approach gives the organization a starting point for building an Experience Factory and a Learning Organization. It helps change the corporate culture into a sharing one by making visible how sharing knowledge adds value

- The approach provides support for the project organization as well as for the experience factory organization.

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